CANADA

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

MINES BRANCH

OTTAWA

PHYSICAL METALLURGY DIVISION
TEST REPORT PM-65-19

EXAMINATION OF URANIUM - 2 Wt % MOLYBDENUM BILLET

By

C. Dixon

Nuclear and Powder Metallurgy Section

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PHYSICAL METALLURGY DIVISION
TEST REPORT PM-65-19

TO: Army Equipment Engineering Establishment
Department of National Defence
255 Argyle Avenue
Ottawa, Ontario

Attention: Col. E. C. Mayhew (Mr. K. Kellaway)

RE: Examination of Uranium - 2 Wt % Molybdenum Billet

Introduction

At the request of Mr. K. Kellaway of the Army Equipment Engineering Establishment, the following properties were determined on a 2 inch diameter x 6 inch long cast uranium - 2wt % molybdenum billet, supplied by Eldorado Mining and Refining Limited and identified as Melt No. 140, from contract CD318016/0308/718/12-30-62-718 DDP Serial 2MC3-300. The chemical analysis of Melt No. 140 as furnished by Eldorado was reported to be:

Molybdenum	-	2.06%
Carbon	-	700 ppm

Properties

Density	-	18.46 g/cc
Hardness	-	306 VHN (R_c 28)

Tensile Strength

UTS	-	127.7 kpsi
2% Yield Strength	-	95.3 kpsi
% Elongation (4D)	-	11.7
Reduction of Area	-	8.3

Compressive Strength

Ultimate	-	Specimen did not fracture
2% Yield Strength	-	92.2 kpsi
Macro Etched Section	-	No cracks or imperfections observed
Microexamination	-	Typical "as-cast" structure

Conclusion

The above properties are typical for a uranium - 2 wt % molybdenum cast alloy except for the per cent elongation and per cent reduction of area which are higher than would be expected.

There was no evidence of any physical defects.

C. Dixon
Nuclear and Powder Metallurgy Section

CD:vb